Space Weather Forecast

Issued on Wednesday, 31 May 2023 at 01:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of isolated R1/R2 radio blackouts throughout. Slight chance of isolated Minor storm intervals Day 2 onwards.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the last 24hrs with three Moderate class flares from a region which has now rotated off the visible disc. There are currently 10 numbered sunspot regions on the visible disc and 2 unnumbered regions, with one large and magnetically complex region in the southwest quadrant. Another slightly smaller region in the southwest has some magnetic complexity, having developed over the past 24 hours. The remaining regions have been either stable, or with only small amounts of change, and are all smaller and magnetically weaker.

No Earth-directed Coronal Mass Ejections (CMEs) were observed during the period.

Solar Wind / Geomagnetic Activity: Solar winds have remained at generally ambient levels 350-400 km/s. The strength of the solar winds magnetic field has been weak. The important north-south component has weakly fluctuated, and the resulting geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low to Moderate. A chance of isolated Moderate flares and an ongoing slight chance of a Strong flare is maintained throughout the period, although the probabilities of significant flares occurring may increase late in the forecast period as new or returning regions are expected to rotate onto the visible disc.

Solar Wind / Geomagnetic Activity: A Coronal Mass Ejection (CME) that left the Sun on 26 May may give a glancing blow at Earth today or tomorrow (31 May-01 Jun). Fast winds from a coronal hole may influence the Earth from tomorrow (01 June).

Solar winds are likely to remain at background to slightly elevated levels, perhaps becoming elevated Day 2 onwards (1 June). Geomagnetic activity is expected to be mainly Quiet to Unsettled with a chance of Active intervals, and a slight chance Minor Storms.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is a slight chance of reaching the Minor Storm threshold should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	20	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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